

## REMARKS

Favorable reconsideration of this application is respectfully requested in view of the following remarks.

The claims currently pending in this application are Claims 9, 10, 13-17, 19-23 and 26-28, with Claims 9, 16 and 22 being the only independent claims.

Independent Claims 9 and 16 are directed to a heat-sealing device which moves a tube shaped packaging material through operation of a seal jaw and a counter jaw and transversely heat-seals the tube in a seal zone of the tube shaped packaging material through softening or melting of plastic material forming the packaging material. Independent claim 22 is directed to a filling machine that includes such a heat-sealing device.

As discussed in the present application, it has been found that when filling and sealing tube shaped packaging material in which the sealing occurs under the liquid food, impurities associated with residual substances of the liquid food may be present on the surfaces of the thermoplastic material to be sealed together. These impurities can hinder or negatively impact the sealing affect. Applicant has found that this problem can be addressed most ideally through the use of a particular sealing jaw and counter jaw combination in which the sealing jaw is possesses a flat operation surface and the counter jaw possesses an operation surface provided with removal/mixture means for removing from the seal zone seal prevention impurity including the liquid food which may remain in the seal zone, and/or mixing the seal prevention impurity with the plastic material that has softened or melted. Applicant has found that particularly good results can be achieved when the removal/mixture means on the operation surface of the counter jaw is in the form of at least two

raised ridges or at least two chevron-shaped elements on the operation surface of the counter jaw. As discussed in the present application (see, for example, the discussion in paragraphs [0039] and [0040]), the provision of at least two ridges or at least two chevron-shaped elements on the operation surface of the counter jaw produces three accumulation zones in the seal zone. These three accumulation zones result in a seal zone having strengthened seal intensity.

The Official Action sets forth a rejection of independent Claims 9, 16 and 22 based on the combined disclosures contained in U.S. Patent No. 5,231,817 to *Sadler*, U.S. Patent No. 3,679,509 to *Fielibert* and U.S. Patent No 3,381,441 to *Condo, Jr. et al.*

As discussed previously, *Sadler* discloses a vertical form, fill and seal machine utilizing a transverse impulse sealer comprised of two jaws 30, 31. One of the jaws 30 is provide with a projecting electrical impulse sealing element 49 that is adapted to seal and sever the tubular film while being pressed against a backing pad 48 on the jaw 31. The projecting electrical impulse sealing element 49 which heats, seals and severs the packaging material is illustrated in Fig. 3 and is discussed in lines 33-36 of column 4 of *Sadler*.

The subject matter set forth in independent Claims 9, 16 and 22 differs from the disclosure in *Sadler* in that *Sadler* does not disclose that the operation surface of the seal jaw 30 is a flat surface across its entire extent. Rather, the operation surface of the seal jaw 30 is provided with the projecting electrical impulse sealing element 49. In addition, in *Sadler*, the counter jaw 31 is not provided with removal/mixture means in the form of at least two ridges or at least two chevron-shaped elements on the jaw 31.

*Fielibert* discloses a process for sealing laminated materials through use of a pair of jaws 9, 11. In *Fielibert*, the upper jaw 11 forms the sealing jaw as evident from the fact that this jaw is heated to a temperature of 225°C as mentioned in column 3 of *Fielibert*. The operation surface of the sealing jaw 11 is V-shaped as illustrated in Figs. 1 and 2. On the other hand, the counter jaw 9 possesses a flat operation surface. By virtue of the V-shaped operation surface on the sealing jaw 11 and the flat operation surface on the counter jaw 9, it can be seen from Fig. 2 of *Fielibert* that the seal zone produced by the seal arrangement is not coextensive with the operation surface of the sealing jaw 11. Rather, the seal zone at which the material layers are melted and mixed extend outwardly only along a portion of the outward extent of the operation surface of the sealing jaw 11. In *Fielibert*, this seal is perhaps sufficient for the intended seal being formed. That is, *Fielibert* is specifically concerned with sealing a cover 2 to a tub-like receptacle 1 and so the illustrated seal produced by the disclosed seal jaw 11 and counter jaw 9 is adequate for that purpose. However, *Fielibert* is not concerned with transversely sealing packaging material under the liquid surface of liquid food to produce a seal zone of strengthened seal intensity. Thus, the disclosure in *Fielibert* provides little guidance about configuring the operation surface of a seal jaw and the operation surface of a counter jaw that are used to produce a seal zone under the liquid surface of liquid food.

Considering the disclosure in *Sadler*, and assuming for purposes of the discussion here that one would have somehow been motivated to modify the apparatus disclosed in *Sadler* in light of the disclosure in *Fielibert*, the most that can be said about the disclosure in *Fielibert* is that it indicates that the heat sealing

element 49 disclosed in *Sadler* can be replaced with a V-shaped surface on the jaw 30 and that the backing pad 48 disclosed in *Sadler* can be replaced with a counter jaw having a flat operation surface. However, the sealing device resulting from such a modification would not be the same as the arrangement recited in the independent claims here. That is, the modified apparatus disclosed in *Sadler* would include a seal jaw 30 provided with a V-shaped operation surface, as opposed to the sealing jaw recited in independent Claims 9, 16 and 22 which possesses a flat operation surface across its entire extent. In addition, the modified apparatus disclosed in *Sadler* would include a counter jaw 31 provided with a flat operation surface, as opposed to the counter jaw recited in the independent claims which is provided with at least two raised ridges or at least two chevron-shaped elements.

In addition, for purposes of further clarifying differences relative to the disclosures in the applied documents, the independent claims have been amended to recite that the seal jaw heats the packaging material to soften or melt the plastic material so that the seal zone is coextensive with the flat operation surface of the seal jaw. This further distinguishes over the arrangement disclosed in *Fielibert* where, as noted above, the seal zone is not coextensive with the operation surface of the seal jaw 11 as shown in Fig. 2 of *Fielibert*.

Referring to the disclosure in *Condo, Jr., et al.*, the Official Action observes that this document discloses providing a sealing machine with means for flattening the tube prior to sealing for purposes of removing liquid from the seal area of a package. The Official Action specifically refers to the discussion in lines 10-18 of column 2 of *Condo, Jr., et al.* It appears there may be a misunderstanding concerning this portion of the disclosure in *Condo, Jr., et al.* The discussion in lines

10-18 of column of *Condo, Jr., et al.* describes one set of clamps that are used to clamp the tube at a location displaced from the sealed end of the tube to confine the liquid within the tube and another set of clamp for flattening the tube at a location beneath the clamped end of the tube and below the liquid level to force the liquid within the tube downwardly. The first set of clamps used to clamp the tube at a location displaced from the seal end of the tube refers to the clamps 31, 31 illustrated in Fig. 5 and Figs 5A-C of *Condo, Jr., et al.* The second set of clamps that flatten the tube at a location beneath the first set of clamps are the clamps 32, 32 shown in Figs. 5 and Figs. 5A-C. As discussed in more detail beginning near the bottom of column 7 of *Condo, Jr., et al.*, the clamps 31, 31, 32, 32 are intended to address problems associated with filled bags that are soft and floppy. *Condo, Jr., et al.* discusses in the background portion that the most common method for packaging liquid and other flowable products involves producing a package substantially larger in volume than the volume of the liquid to be introduced into the package so as to leave adequate space at the top of the package and prevent the liquid from interfering with the sealing. However, as *Condo, Jr., et al.* notes, these packages are soft and floppy. Thus, with the use of the clamps 31, 31, 32, 32, *Condo, Jr., et al.* seeks to avoid packages that are soft and floppy by applying pressure to the material forming the bags. This stretches the bags and addresses the problems associated with other known methods. Thus, the clamps 31, 31, 32, 32 described in *Condo, Jr., et al.* are not used to remove liquid from the sealing area of a package. The clamps 31, 31, 32, 32 are not sealing clamps. In fact, as illustrated in Fig. 5 and Figs. 5A-C of *Condo, Jr., et al.*, the sealing element 20 is displaced a considerable distance from the area of the packaging material that is clamped by the

clamps 31, 31, 32, 32. Thus, the disclosure in *Condo, Jr., et al.* does not disclose utilizing an arrangement for removing liquid from the seal area of a packaging material, and adds nothing of relevance to the claimed subject matter at issue here.

In light of the foregoing, it is respectfully submitted that the combined disclosures contained in *Sadler, Fielibert*, and *Condo, Jr., et al.* would not have directed one to do that which is defined in independent Claims 9, 16 and 22 as the invention.

On an additional point, it is noted that the independent claims in this application recite that the operation surface of the counter jaw is provided with at least two raised ridges or at least two chevron-shaped elements. Such a feature is not disclosed in *Sadler, Fielibert* or *Condo, Jr., et al.* Addressing this point, the Official Action observes that it would have been obvious to provide multiple raised ridges or multiple chevron-shaped elements as such a modification constitutes a mere duplication of essential working parts of a device involving only routine skill in the art. In support of this position, the Official Action refers to the decision in *St. Regis Paper Co.*, 193 USPQ 8. That decision involved claimed subject matter relating to a bag having, in addition to other features, a multi-ply construction. The primary reference relied upon disclosed a bag having a single ply. However, other available prior art established the known use of multi-ply bags. The Court thus determined that it would have been obvious to modify the bag in the primary reference to include multiple plies for the reasons known in the art, including increased strength and durability.

Here, however, there is no disclosure in the documents relied upon in the Official Action indicating the desirability associated with a counter jaw having an

operation surface provided with at least two ridges or at least two chevron-shaped elements, particularly in combination with a sealing jaw having a flat operation surface. As discussed previously, this arrangement provides a sealing zone having three accumulations zones, thus resulting in strengthened seal intensity in the seal zone. The use a counter jaw having an operation surface provided with at least two ridges or at least two chevron-shaped elements does not represent a mere duplication of parts, but rather provides improved results not at all recognized by any of the documents relied upon in the most recent Official Action.

For at least the reasons set forth above, it is respectfully submitted that independent Claims 9, 16 and 22 are patentably distinguishable over a combination of the disclosures contained *Sadler, Fielibert and Condo, Jr., et al.* Accordingly, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should any questions arise in connection with this application, or should the Examiner believe a telephone conference would be helpful in resolving any remaining issues pertaining to this application, the undersigned respectfully requests that she be contacted at the number indicated below.

Respectfully submitted,

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